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(54) Abstract Title
Correcting for distortion in seismic data due to ship motion

(57) An apparatus and method for removing the distortion in marine seismic data resulting from the motion of the ship i.e. Doppler shift. The ship trails one or more seismic sources and receivers and moves forward at a known velocity. The seismic sources emit seismic waves that travel through the water and reflect off interfaces between rock formations below the ocean floor. The motion of the sources and receivers introduces distortion in the recorded seismic data that can be modeled using Doppler theory The data preferably is corrected for source motion independently from the correction for receiver motion. The seismic data is first corrected for receiver motion and then for source motion. The technique for correcting for source motion includes correlating the receiver-corrected data with a reference sweep signal, performing an F-K transform, performing an inverse F-K transform on a selected subset of the F-K transformed data, and computing appropriate correction filters for the data resulting from the inverse F-K transform. This process is repeated for all subsets of F-K transformed data and the resulting filtered data are summed together.
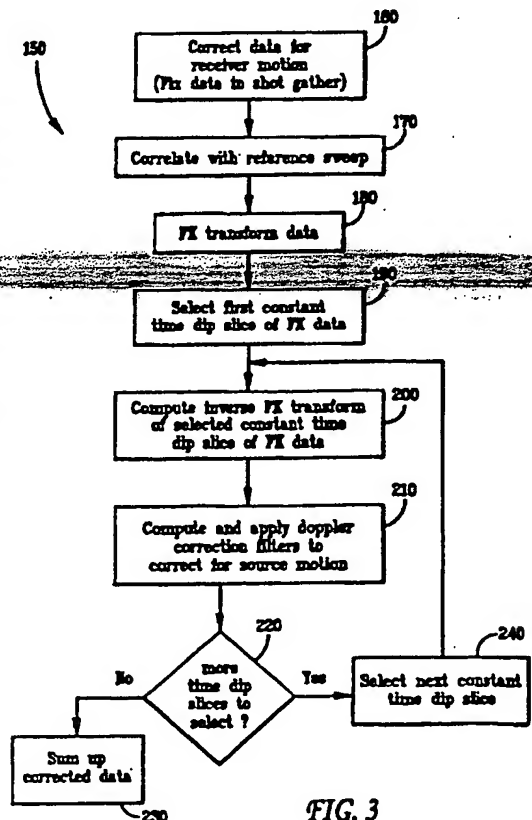
FIG. 3

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.